The JOURNAL *of* GEOGRAPHY

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VOLUME XXXVI FEBRUARY, 1937 NUMBER 2

THE BULGARIAN VALLEY OF ROSES*

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Cradled between parallel mountain ranges in central Bulgaria, and hence protected from the fierce north winds of winter, lie several small but fertile valleys. Of these the most important are the depressions in which flow the two rivers, Strema and Tunja. There was a time in past geological ages when the two valleys were one, drained by a stream which flowed into the Black Sea. Today the two valleys are the source of one of the rarest and costliest products of the vegetable kingdom: attar of roses. France, Turkey, Persia, and India likewise grow roses for commercial purposes, but Bulgaria far outranks Turkey, the nearest competitor, in annual production for the world market.

THE NATURAL SETTING

The valley of the Tunja River, dominated by the small city of Kazanlik, is about forty-four miles long and from five to seven and one-half miles wide; the valley of the Strema, with the town Karlovo as the cultural focus, is barely twenty miles long and only four and one-half miles wide. Since the two valleys have a common origin, since they lie end to end with merely a low divide between them, and since they exhibit an almost identical landscape both physically and culturally, they can be considered as a unit and called the Bulgarian "Valley of Roses."

The trend of the Valley of Roses is essentially east and west. To the north lie the main ranges of the Balkan Mountains, and to the south, the so-called Anti-Balkans. Situated mostly between elevations of 1000 and 2000 feet, the Valley is lowest in its southern portion, and accordingly contains much south-sloping land which is especially good for rose plots because of its exposure to the sun.

* The writer is indebted to Dr. Ernest S. Guenther, Chief Research Chemist of Fritzsche Brothers, Inc., for furnishing the illustrations.

The Valley of Roses is not only the most extensive rose garden in the world, but contains also magnificent walnut trees, and herds of sheep and cattle. Dozens of small villages three to five miles apart and interconnected by wagon trails dot the landscape. Plots of corn, wheat, and potatoes are interspersed among the rose fields, for roses are merely a cash crop and cannot provide sustenance for the farmer or his animals. A slight zoning influence is noticeable, in that the rose plots tend to occupy an intermediate position on the side of the valley, between the beech forests of the upper slopes and the grain fields of the flat bottom lands. Plantings of tobacco, vines, and mulberry trees give an indication of other economic activities in the region.

THE GROWING OF ROSES

The oil-bearing rose was introduced from Turkey more than two centuries ago. Because of the rich soil and favorable climate the plant rapidly adapted itself to its new environment, and the distilling industry flourished. Two varieties of roses are grown for their oil. The more important of these is the red Damascus rose *Rosa Damascena,* which gives good yields of excellent attar, but which has rather low resistance to plant diseases and is sensitive to unfavorable weather conditions. The other is the common white rose *Rosa Alba,* which is much hardier, but whose blossoms, tho more numerous than those of the red rose, give a smaller percentage of distinctly inferior oil. Accordingly, the distillers of attar of roses encourage the farmers to grow red roses, whereas the farmers often prefer to grow white roses because of the smaller risks involved.

A rose plantation requires constant care. Aside from the initial plowing and planting, a rose plot has to be hoed five to eight times and plowed five to eight times every year. During the winter, young bushes must be protected from the cold by covering them with earth. Periodically the shrubs must be trimmed and fertilizer applied. It is quite evident that a peasant who owns a plot of roses is closely tied to the soil.

HARVEST AND DISTILLATION

But it is during the harvest season, from mid-May to mid-June, that activity in the rose fields reaches its peak: Sleep is forgotten in an intensive effort to keep the harvesting in step with the quick maturing of the blossoms. The women and children of the peasants start to pick flowers about 4:00 A.M., tho they usually stop by noon. The early start is made possible of course by the closeness of the

harvest period to the summer solstice. The picking is not continued thru the afternoon because the high temperature volatilizes much of the essential oil in the flowers and thus greatly decreases the yield. The best yields are obtained on cool, still mornings when moisture in the form either of dew or of rain has condensed from the atmosphere. On such days as little as 2600 pounds of rose petals may yield a pound of attar of roses. On hot or windy days more than three times as much raw material may be required. Two tons of petals for a pound of distilled attar is a normal average. In order that the harvest of rose petals may be as great as possible, the whole

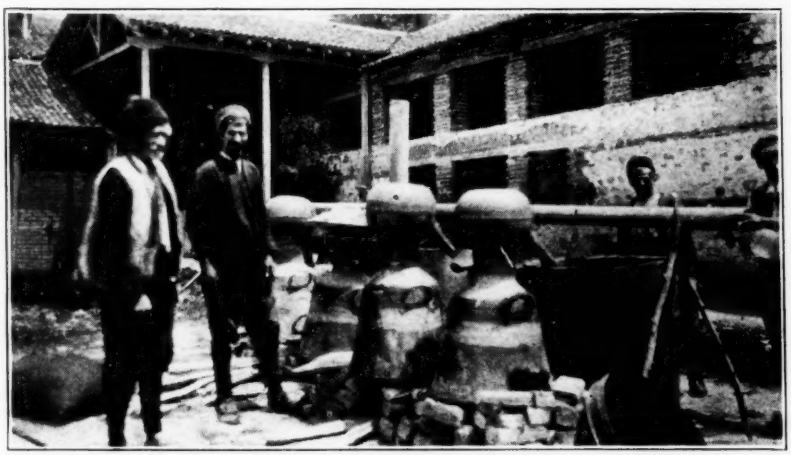

FIG. 1. Old-fashioned rose distillation in Bulgaria.

year and particularly the harvest season must be characterized by high average humidity and frequent rains. If the weather is dry or hot, the rose bushes bloom rapidly, their flowering season lasts only ten or fifteen days, and an excess of flowers is produced daily which it is impossible to gather and distill on time. Under such conditions the yield of attar is greatly decreased and its quality is impaired because the rose petals undergo a slight fermentation before distillation. It may be said that the yield of rose blossoms in pounds an acre in any year depends to a large degree on the climate during the preceding growing period, whereas the yield of attar of roses from a ton of rose petals is a function mainly of the weather on the day of harvest and distillation.

While the women and children are gathering flowers in the fields, the men are taking filled sacks on donkey-back or in wagons or ox-carts to the nearest village, in order to sell their crop to the agent

of a distilling company. The petals are sold by weight, usually at a prearranged standard price. In the old days the farmer would take his rose petals home to his courtyard for afternoon distillation, or he might set up his apparatus under a tree near his rose plot where a running stream could be used to cool his distillate. The old-fashioned stills have been described as "Kansas milk cans surmounted by a stork's head with a hollow bill." They consisted of conical boilers about forty inches high, made of copper but tin-plated on the inside, and having a capacity of thirty or forty gallons. The truncated upper part was constricted, and ended in a cylindrical

FIG. 2. The arrival of flowers at a modern distillery.

opening into which the "stork's head" was set. The "bill" was joined to a tin pipe, which led thru an ordinary wooden barrel filled with running water and thus served as a crude condenser. On the other side of the barrel the pipe ended directly above a glass bottle in which the distillation water was collected. A visitor to the Valley of Roses in 1893 relates the following:[1]

"The preparation of attar of roses is a simple distillation, but this is carried on in the crudest and most primitive manner. For example, the supposedly air-tight joints between the retorts and the flasks are merely fashioned by wrapping an old turban around them. It is clear that fully double the yield of rose oil could be obtained if the process were carried on more rationally under the supervision of trained chemists. As it is, so much rose water is lost

[1] K. Floericke, Bulgarien und die Bulgaren, p. 10. Stuttgart, 1916.

from the badly connected apparatus, that the ground all around is softened by it (the distillation is usually carried on in unplastered back yards) and one is forced to wade around in this half precious, half revolting mush up to his ankles. One would be mistaken to think of big factories in connection with the preparation of rose oil. It is exclusively a matter of a small home industry, and on this rests the relative prosperity of the region."

This state of affairs no longer prevails. Only because of Bulgaria's remoteness from the centers of technological progressiveness could attar of roses continue to be produced for so long in such

FIG. 3. The weighing out of flowers.

impossible apparatus. Today only a small amount is prepared by such primitive methods, mainly by small farmer cooperative organizations, which, tho state-subsidized, are not very successful. Most of Bulgaria's attar of roses is now produced under standardized procedure in some thirty more or less modern factories, which are owned and operated to a great extent by foreign capital. The main reason why individual farmers and farmer cooperatives do not do more distilling is that they lack the efficient export and sales organizations of the larger private companies. They usually have to sell their product to these concerns, and thus have to content themselves with a very moderate profit.

A typical modern distilling plant consists of a long, narrow building without windows, but completely open on one side. It faces a courtyard which during the harvest season contains sacks of rose

petals and huge heaps of cut wood for heating the direct-fire stills. Down the main axis of the building, under the sloping, tile-covered roof, six or eight stills of perhaps 400 gallons capacity rest in a stone or brick foundation punctured in front by large fire holes. The old-fashioned distilling plant was built on essentially the same lines, tho on a much simpler scale.

The fundamental process in both kinds of distillation is the same. A large quantity of rose petals is placed into each still, and several times their weight of water is added. The vessel is then heated on the outside, either by a direct fire, or by steam. The vapors pass thru a condensing tube cooled by running water, and condense to "rose water," which may or may not have a layer of oil floating on it. The rose water is partly redistilled, and on the surface of the new distillate a layer of oil collects, which is carefully separated by means of a special kind of conically shaped spoon. The oils are united, and constitute the attar of roses of commerce—a yellowish or yellowish-green liquid which assumes a pasty consistency below ordinary room temperatures because of the odorless waxy solids which it contains. It is one of the most useful raw materials in the manufacture of perfumes.

Secondary Products

In Bulgaria the odor of roses is so well liked that it is used extensively in the preparation of gastronomic delicacies. One of the best preserves made by Bulgarian women is rose-leaf "sladko." It is prepared and consumed thruout the country. Puddings are often flavored with rose water, and even some wines betray the odor. One of the oddest by-products of the rose distilling industry used to be "rose butter," a substance of waxy consistency which collects on the hands of the girls and women who pick the petals. In the days of Turkish rule this material was prized more highly than the attar itself. It was carefully scraped off the hands of the pickers and sold to rich Turks, who would add a little of it to their tobacco, and thus perfume the whole atmosphere when they smoked. This custom seems to have declined, however, with the abolition of the harem.

Unethical Practices

For many years attar of roses has been exported from Bulgaria in tin-plated copper flasks of distinctive shape. The weighing and sealing of these containers has long taken place under direct gov-

ernment supervision. In spite of this, the stigma of adulteration has been repeatedly cast on Bulgarian rose oil. Some of the criticism is certainly justified, some of it quite as certainly not.

Adulteration—"sophistication," as the essential oil trade is pleased to call it—was undoubtedly more widespread in the past than it is today. In the old days, when the individual farmers did their own distilling, and when the government had not yet begun to control the purity of the attar of roses to be exported, adulteration was often practiced several times on the same batch of oil. First the farmer himself would increase his yield by sprinking geraniol, one of the cheap constituents of attar of roses, over the petals before distillation. Then the middle man who bought the oil from the farmer would "stretch" it by adding some more adulterant. And finally the wholesaler outside the frontiers of Bulgaria might dilute it a little more.

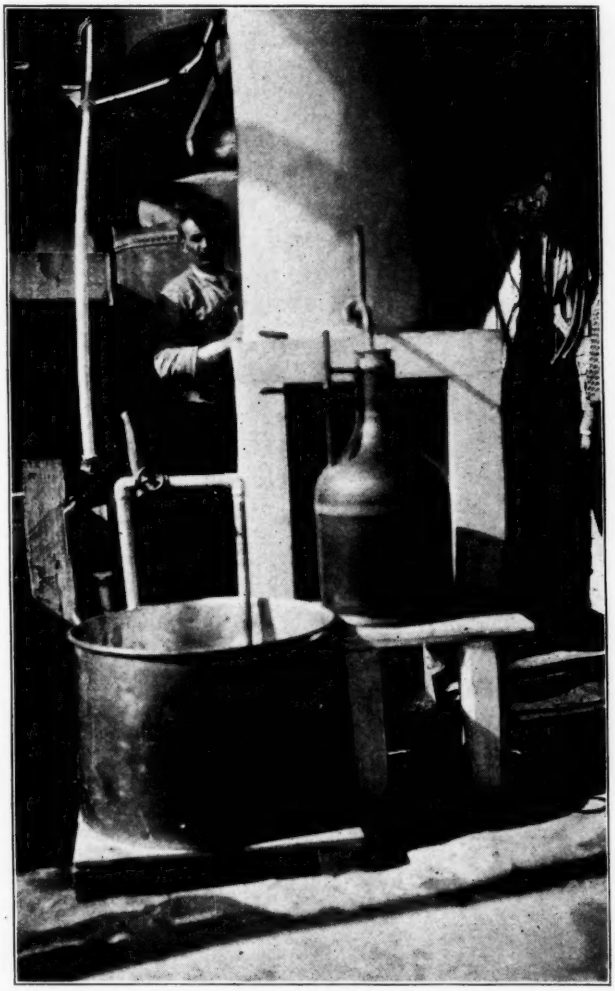

FIG. 4. Modern industrial rose distillation. The florentine flask in which oil and water separate.

Today the Bulgarian government has prohibited the importation of oil of geranium, oil of palmarosa, and other such substances

which might be used to adulterate rose oil. Heavy penalties are imposed for smuggling in such materials, and yet they are offered for sale to the peasants more or less openly thruout the Valley of Roses. Since, however, the peasants nowadays distill only a small fraction of the total amount of attar of roses produced, falsification from this source can play only a minor role; and falsification on the part of the larger distilleries is unthinkable. Consequently, tho the annual statistics for the export of rose oil are considerably greater than production figures, adulteration is not nearly so prevalent as this fact alone would seem to indicate. The main reason, rather, for this discrepancy—and this point sheds an interesting side light on the character of the Bulgarian peasant—lies not in falsification thru dilution, but rather in the reticence of the individual peasant to declare the true quantity of attar of roses which he has produced, for fear of having to pay higher taxes. He is "moved by an innate feeling to conceal the state of his fortune and to have himself believed poorer than he really is."[2] For this reason the peasant understates his yield of rose oil, and causes the total annual production figures to come out lower than they really are, whereas the export figures are compiled by the government customs bureau, and are exact.

ECONOMIC CONSIDERATIONS

The actual amount of land used for the cultivation of roses in Bulgaria has varied rather widely with the years, as the following table will show. Since almost all the cultivation occurred in the Valley of Roses, it is evident that the crop pattern there must have undergone great changes.

Year	Land under Rose Cultivation (Acres)	Total Yield of Flowers (Short Tons)	Average Yield of Flowers (Tons an Acre)
1897†	10,391	9,839	0.95
1907†	17,611	10,772	0.61
1917†	21,404	12,945	0.60
1927†	12,051	9,934	0.82
1935*	16,533	12,436	0.75

†L. Jozoff, Das Rosenöl. *Das Rosental*, V. 1, No. 1, p. 5, Bulgaria, 1935.

*Private communication from Professor As. Zlataroff of the University of Sofia, Bulgaria.

Even in Bulgaria itself, attar of roses is not too important in the domestic economy. In 1935 it ranked no higher than fifth in value in the list of exports, and only ninth in total acreage. Its export value

[2] As. Zlataroff, La Rose et l'Industrie de l'Essence de Roses en Bulgarie, p. 9, Bulgaria, 1926.

was less than one-thirtieth that of tobacco. Obviously, then, one is dealing here not with a large industry which might be considered the basis of Bulgarian prosperity, but rather with a relatively small activity which is significant geographically only because of its extreme localization, and interesting because of its unusual character.

In the days of Turkish rule over Bulgaria, most of the attar of roses was sent to Constantinople, but since the middle of the last century a constantly growing percentage has found other destinations. First the capitals of Europe were ready markets, and then America. Today the United States ranks first in the import of this luxurious fragrance, followed by France, England, Switzerland, and Germany.

Small Scale Purchases

The visitor to central Bulgaria generally wants to take home some small gift bottles of attar of roses. Tiny "muscals," which are vials containing about a sixth of an ounce of the costly liquid, can be bought locally. However, the purchase can be concluded only after extensive bargaining, unless the customer is willing to pay twice too much. To the westerner the necessary haggling is often distasteful, but in Bulgaria—south-European and strongly orientalized—it is inescapable.

If time is plentiful and patience not wanting, let him deal directly with one of the small distillers. At the outset he will probably have to submit to a tour of inspection of the plant, just to prove to himself, his host says, that everything proceeds ethically. Next he may be invited to the home of the distiller himself and bribed by his wife, unless it be a Mohammedan household, by means of some "sladko" or other delicacy which he must of course accept for courtesy's sake. During his host's discussion of the hardness of the times and the poorness of the crops he will be further befuddled by drinking repeated cups of concentrated Turkish coffee and smoking a goodly number of native cigarettes. Finally, inevitably, the defenseless customer will surrender, and agree to pay a stiff price for his souvenirs. Then the host will unlock a cupboard, take out a small bottle of attar of roses, warm it in his hand to dissolve the precipitated wax, and carefully weigh out the desired quantity before the eyes of his guest. With a sigh of relief the exhausted visitor takes his prize from his bowing host, pays his money, and departs. What does it matter if the attar is adulterated? He cannot tell the difference, nor can any of his friends. And it does smell divine.

THE STUDY OF CITIES AS A CONCLUDING UNIT IN ECONOMIC GEOGRAPHY

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THE PROBLEM

Doubtless most teachers of geography in secondary schools[1] have sensed the difficulties involved in concluding a course in economic geography in a thoroly satisfactory manner. Careful planning is required to bring the course to a close with a unit that is a fitting climax, and that provides, in addition, a thoro overview and summary of the preceding work.

The common lack, in geography, of a cumulative building up of facts and ideas grows in part out of the very nature of the subject. Instead of each topic or problem resting firmly on the preceding ones, it is more often true that each, tho related to preceding ones, stands more or less by itself. In the words of an observant college student, it is like climbing up and down a row of step ladders. Economy of learning as well as of interest makes desirable, wherever possible, a progression, a pyramiding of topics and problems. Especially does it seem desirable to have at the end a unit which depends on the preceding ones for a large part of its basic facts and ideas.

The failure to use the major findings of each division of the work in the division immediately following also makes a thoro review highly desirable if not imperative. All experienced teachers of geography know that repetition of basic data is essential, and that a review after the whole field has been covered is particularly valuable. To secure a *review* that is a *new* view of the major items, a view that will be stimulating and yet not too diverting, is a vital part of the problem.

A review, moreover, needs to be narrowly selective—a summation. Much of the factual material in geography is so much water to make the wheels of the mind go round—it is not to be recalled. It has done its work. Some kind of a procedure that will pick out the highlights should be adopted. If this can be incorporated as a part of the concluding unit, it is easier to enlist the whole-hearted cooperation of the students.

[1] Junior and senior high school and junior college.

URBAN GEOGRAPHY OFFERS A SOLUTION

The writer has experimented with various solutions to this need for a closing topic that gives a vigorous review of the essential facts and ideas, and that constitutes a fitting climax to the course. Among the more workable have been: (1) journey geography, (2) an analysis of the interdependence of regions, largely thru trade, and (3) a study of cities. The appropriateness of any one of these will depend, of course, on whether its novelty has been exhausted earlier in the work. This discussion will develop the use of the third, city or urban geography.

The method is, in brief, to select representative or outstanding cities for study as the last phase of the work. For systematic economic geography, the choice might well be made from a list of the cities of more than one million population. These will be found to reflect quite accurately the major items in economic geography. For the geography of a continent, it seems desirable to keep to cities of one hundred thousand or more, the so-called "great cities." For a state, the most useful list consists of the larger urban centers and of a sufficient number of the smaller ones to give representative cities from the contrasted regions of the state.

THE MERITS OF THE PLAN

A study of selected cities clearly meets our requirements for a concluding unit. Each city epitomizes the region of which it is the dominant trade center, and in its trading and manufacturing activities reveals much about distant areas; one can hardly understand a city without calling to mind, *reviewing* from a *new* viewpoint, the major facts about the region it serves. Thus the review and summary are secured. But more than that, some new material is introduced which builds on that which has preceded, thus giving a pyramid cap to the broad regional or topical foundation laid in the preceding weeks. These merits of city study depend, of course, on some of the basic facts of the human geography of the Twentieth Century—that the peoples of the commercial world are pretty largely nucleated in cities, which must of necessity reveal the character of the peoples and lands of which they are the centers of industry, commerce and communication. This urban dominance is notably characteristic of the United States and Canada, the Plata River Countries, Australia, and Western Europe.

Another merit of city study as a culminating topic in economic

geography is the ease with which it can be carried out. Materials are commonly available for cities even tho lacking for the region to which they belong—photos, street maps, trade statistics, historical accounts, Chamber of Commerce publications, federal commerce reports, port descriptions. The student who takes a city as a special topic on which to report is certain of some measure of *success* in his search for materials.

TEACHING THE UNIT ON CITY GEOGRAPHY

The successful direction of this unit involves an acquaintance with the available source materials and with the capacities of the participating students. These vary so widely that it is difficult to generalize. The teacher can, perhaps, assign readings as the basis of discussion; he can develop the whole topic by skillful questions, by drawing out what the pupils know of the tributary area of the city, and by filling in with data of his own; he can resort to the easier method of "telling," or reading aloud particularly good selections; or he can have oral reports by members of the class on selected cities.

In directing the preparation and presentation of the oral reports, it is desirable to make the individual assignments near the middle of the course, after the work is well under way and the capacities of the individual students are known, but early enough to give plenty of time for the search for data. It generally proves best, moreover, to assign each city to an alert student who stands in the upper third of the group, or to a committee with such a student as chairman. A study guide should be provided, indicating what to look for and where to find it. A summary of findings, in the form of a series of short statements (a "brief"), is required of each committee a week or so before the unit on cities is taken up by the entire group. If not satisfactory, it may be returned for further work. From the accepted briefs, the teachers can select the cities on which oral reports are to be made. Perhaps some of the studies are so imperfect that they are not worth presenting. The oral report may cover the subject matter of the entire brief or it may consist of the portion which in the teacher's judgment is most worthwhile. Very commonly it is best to restrict the oral reports to the more valuable portions of the better briefs. All of these steps are doubtless clear enough except, perhaps, the content of the study guide.

A STUDY GUIDE FOR ORAL REPORTS

The study guide, which may be dictated, posted on a bulletin board, or mimeographed, should include specific directions to the available sources (which vary widely from school to school), and a set of questions or problems to guide the students in their work. Altho the list of problems may well be fairly comprehensive, it should be remembered that some of them may have to go unanswered, and, moreover, that the brief or summary of findings need not follow precisely the outline suggested by the problems.

Of the possible problems in harmony with the objectives of the unit we select seven, all of them aimed at revealing the city as an organic unit epitomizing the geography of the region it serves. (1) What does the city look like (the *landscape*)? What is its shape, its street pattern; of what contrasted districts, such as commercial and manufactural, is it composed? (2) What is the nature of the area which the city occupies (the *site*)? What have been the good and bad features of the site for urban use? (3) When was the city started and why was this particular site chosen (*origin*)? (4) How has the city grown to its present size and importance (*evolution*)? What stages in its growth can you discover? How are they related to the development of the region in which it lies? (5) How do its people make a living today (*function*)? Consider trade, manufacturing, and other functions such as political and educational. (6) How is the city located with respect to raw materials for manufacture, power resources, richly productive lands, trade routes, and so on (its *situation*)? How are the activities (functions) of the city related to these resources and to the needs of the near-by and more distant lands and peoples. (7) What problems more or less peculiar to the city and its region are faced? (e.g. water supply for Los Angeles, flood control for New Orleans).

The problems selected, the local library resources, and the capacities of the students, will dictate the sources to be listed in the study guide. Encyclopediae and articles in current magazines, such as *The American City* and *Literary Digest*, are available where there is a good library. The *Readers Guide* is an invaluable aid in locating current magazine articles on cities. Among the geographical magazines the *National Geographic* and the *Journal of Geography* are especially useful. Maps in geography texts and atlases show major elements of situation. Accounts in history texts and local histories

throw light on the evolution, as do the census reports. Federal reports, especially those for ocean ports, are invaluable. Topographic maps, obtainable for many cities from the United States Geological Survey for ten cents a sheet, commonly give many of the critical details of site, and Chamber of Commerce and Board of Trade publications can be relied upon for maps, photographs, and ideas, tho all factual statements must be used with caution. Commonly much of the material used in the earlier part of the course can be used again in this connection. Careful provision of suitable source materials for the cities assigned is essential to the success of a study of cities as the culminating unit in a course in economic geography.

THE DEVELOPMENT AND FUNCTIONING OF THE PORT OF CHURCHILL

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The natural harbor facilities of Churchill have been occasionally utilized since 1619. With the establishment there in 1670 of a Hudson's Bay Company trading post, Churchill became a link in that chain of posts which, by holding together the fur empire of that company, helped also to consolidate British power in North America. During the past two and a half centuries several hundred voyages have been made to Hudson Bay, and altho they have never maintained set sailing schedules, the principal fur trading companies still send ships there every summer to gather peltries collected during the winter.

HISTORY OF THE HUDSON BAY RAILWAY

Agitation for improved facilities for utilizing the Hudson Bay route to Europe has ultimately resulted in the installation of modern port forms at Churchill. This agitation began some fifty years ago in protest at the Canadian Pacific Railway's monopoly of the carrying trade of the prairies. A route to the bay along the Churchill River which had been surveyed by the Hudson's Bay Company for the use of dog teams was first recommended as the best route for a rail link in connecting the prairies with Europe. Finally the railway was completed north to The Pas, but plans for a railway thence to the bay were altered to make Nelson the terminus. After partial development of harbor works at Nelson and the construction of a

railroad most of the way there, expert advice caused a readoption of Churchill as the terminus because of its superior natural advantages for port development. These confused plans have made the railway from The Pas to the bay fifty miles longer than it would have been had the original plans for the route to Churchill been followed. The initial cost of the railway was $53,000,000, but this amount has since been augmented by heavy operating losses.

With the completion by the Dominion government of this railroad in 1930, the slender thread which connects Hudson Bay with the wheat country was finished. Upon such a meager contact with its tributary area all hopes for port expansion at Churchill are

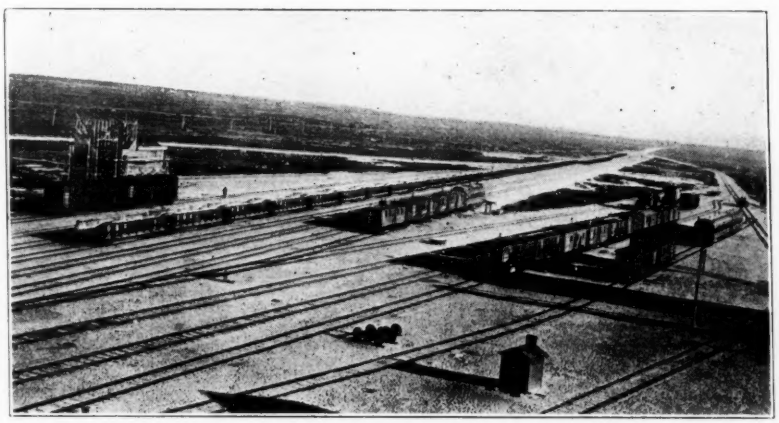

FIG. 1. The railway yards and landscape at Churchill.

founded. Constructing and maintaining this railway and the accompanying telegraph line have been accomplished by surmounting serious engineering problems. Because rails are laid on frozen ground, some time must elapse before the ballast settles sufficiently to make fast transportation possible.

Arguments for the construction of a port on the bay have been based chiefly on the saving in mileage which such a port would effect in connecting the prairie provinces with Britain. With a reduction in mileage, a reduction in shipping costs has been anticipated. Liverpool, the great market for Canadian wheat, is 3,007 miles from Montreal and 2,967 miles from Churchill—an insignificant difference. But Edmonton and Calgary in the wheat country are a thousand miles nearer Churchill than they are to Montreal. Saskatoon is 4,878 miles from Liverpool by way of Fort William and Montreal, but only 3,814 miles from Liverpool by way of

Churchill. Thus thru effecting a saving in mileage, the Hudson Bay Railway and the port of Churchill have been expected by Manitoba enthusiasts to revolutionize Canadian commerce. With such hopes in mind, the pattern of the port of Churchill was planned and developed.

THE PORT PATTERN

The harbor at the mouth of the Churchill River to which the port pattern has been adjusted has certain natural advantages. Cliffs from 30 to 70 feet high enclose a harbor six miles long with a width at low tide of from one to two and one-half miles. The bottleneck entrance between headlands is 1,600 feet wide at low water. The tidal range averages about 13 feet. Because of the cliffs which guard the entrance, northeast gales are the only winds which can damage the harbor district. On account of the direction of the river, there is but a short strip on the west side of the entrance and opposite the port site which might be thus adversely affected.

Since the open season on Hudson Bay at best is no longer than from mid-July to mid-November, port construction has been handicapped. Surveys of the channel were made by drilling holes in the ice by means of a steampipe and dropping sounding lines thru these holes. Dredgers built on the site have improved the channel so that it now has a depth of 30 feet for a width of 1,850 feet, and a depth of 60 feet for a width of 750 feet. With additional dredging, the capacity of the harbor could be increased to accommodate more ships than could reasonably be expected to tax its capacity. There are now 140 acres with a depth of 30 feet or more at low water, besides an area of 180 acres with a depth at low water of from 18 to 30 feet.

The townsite of Churchill which has been planned as an essential part of the port pattern, belongs to the province of Manitoba, and lots there are to be leased rather than sold. "The city" has been surveyed and planned by the provincial Department of Railways and Canals which has opened it to settlement. Despite ambitious plans, however, it seems improbable that Churchill will soon be more than a lonely frontier settlement where huskies howl. As late as 1931 the only buildings on the site assigned for commercial and residential use were a church and three tiny buildings occupied by banks. To these public buildings, a motion picture theatre was added in 1932. The permanent population consists of not more than a score of persons, altho construction work and shipping materially increase the summer population.

Preparing the townsite for use has involved leveling the surface and filling muskegs. Water is piped from a lake eight miles away which has been deepened for a reservoir and connected with feeder lakes. A ten-inch pipe line heavily insulated with muskeg carries water to the townsite where a pumping station keeps it moving. The problem of sewage disposal has been solved by the construction of boxed-in pipes kept from freezing by steam. Heat for the town is furnished by the government-owned railway which has four boilers at the roundhouse to provide steam for that purpose.

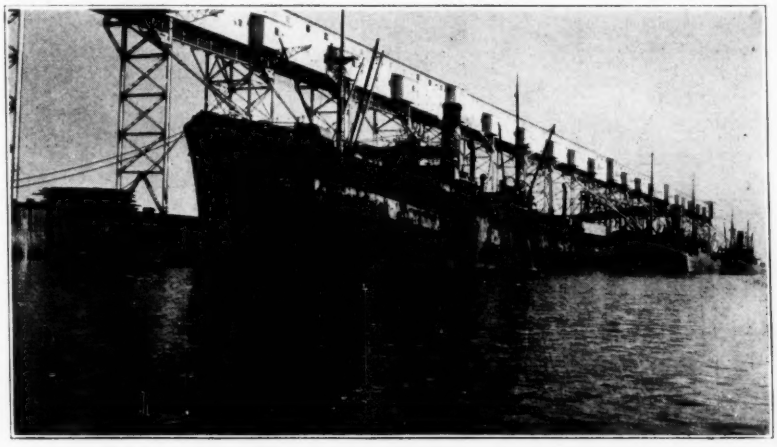

FIG. 2. Three vessels loading at the elevator.

An electric generator at the elevator is prepared to supply electricity for port and town requirements. The railway terminus, a vital part of the port pattern, has fourteen miles of sidings. The roundhouse has six engine stalls which, because of the low winter temperatures, are provided with an unusual system of doors. A mechanical coaling plant has been installed to refuel the railway engines. The powerful radio station aids navigators in checking their position. This help in ascertaining bearings is peculiarly valuable in Hudson Bay where proximity of the magnetic pole makes the compass of little help in determining directions.

To define the shore line, riprap work has been constructed. At low water the cribbing extends 32 feet above and 32 feet below the water level. The quay, proudly called "the docks," is less than a mile from the mouth of the river and about 650 feet from the shore line. Cribbing 28 feet wide extends along the land side of the quay for 1,500 feet. The quay measures 1,800 feet in length. The

reinforced concrete elevator, "the most modern in the world," was built in two summers. It has a storage capacity of 2,500,000 bushels, with provisions for extension to a capacity of 10,000,000 bushels. It stands 600 feet back from the deep water cribbing. Its foundations are laid on piles driven thru tidal waters into the underlying frozen gravel. Rock and gravel from the dredgings were filled in nearly to the top of the piling and covered with a concrete mat to form foundations for the elevator. Upon this solid base were built supports for elevator bins.

Because of the short shipping season and late wheat harvest, loading and unloading facilities have been constructed with a view to the rapid handling of wheat. Three ocean vessels can be loaded simultaneously from 24 spouts and eight belts. Transit sheds are served by four tracks to permit unloading 400 wheat cars daily. Each car can be unloaded in less than six minutes by the use of dumpers. All of the loading devices are electrically operated and require the work of very few men.

THE FUNCTIONING OF THE PORT

The extent to which these port facilities have thus far functioned has been a keen disappointment to many, tho expected by others. In appraising the functioning of the port it must be remembered, however, that Churchill was not completely prepared to handle wheat until 1933, and in that year the wheat market was at a low ebb.

In 1931 two ships carried out wheat on experimental runs. In 1932 ten vessels called to carry out 2,700,000 bushels of wheat, most of which had accumulated in the elevator. At least one of these ships carried cargo consigned to purchasers in the prairie provinces, and one ship brought two passengers. In 1933 ten vessels of an aggregate capacity of 47,445 registered tons carried away 2,500,000 bushels of wheat from the elevator, but only 6,000 bushels of the 1933 crop. In 1934 ten ocean-going vessels of 31,587 total registered tonnage called. Exports for that year included 4,000,000 bushels of wheat, 2,500,000 bushels of which had accumulated in the warehouse, 580 head of live cattle from the prairie provinces, 2,000,000 feet of lumber, and 8 tons of honey.

Inasmuch as some 20,000 vessels a year enter and clear Canadian ports, it is obvious that the number which called at Churchill is a very small percentage of the total. Since the Hudson Bay route has been regarded askance by some shipping companies, shippers, and underwriters, the struggle to have the completed port facilities

utilized is a struggle in which the opposing forces of nature are augmented by powerful interests. The open season in Hudson Bay is short because of shore and floe ice. Altho theoretically the season might be extended by ice breakers and by broadcasting information concerning ice hazards, practically the season is confined to the period between August 10 and October 1 because in the weeks before and after that period insurance rates are so high as to be almost prohibitive. A recent reduction for the open season in hull insurance rates has raised hopes that the "political railway" might justify itself on economic grounds and that the port of Churchill might attract more ships. The unfavorable publicity attracted to this route by the loss of a freighter in 1932 after collision with an iceberg in Hudson Strait has been apparently somewhat offset by the more favorable insurance rate.

Optimists hope that a general revival in world trade will increase the use of the port, and they are making some efforts to attract other commodities than wheat. There has been much discussion of shipping Canadian cattle to Europe thru Churchill, as it is contended that this route permits stock to reach European markets more cheaply and in better condition than if shipped thru eastern ports. The increase in the number of head shipped from 250 in 1933 to 580 in 1934 may be suggestive. It has been said that a profitable reindeer industry would help round out the port business, but as yet no study of the character of the moss on the west side of the bay has been made, and the failure of Hudson's Bay Company to develop a reindeer industry on Baffin Island offers little encouragement. Some expect that with the discovery of more mineral deposits in the Canadian Shield, exports of ores to Britain will provide increased port business. It has even been suggested that, if advertised, the ruins of the once impregnable Fort Prince of Wales, now preserved as a Canadian Historic Site across the river from Churchill, might arouse interest in the romance and glamour of early days and develop a tourist business which would spread appreciation of the Hudson Bay route.

To date Churchill has scarcely been a commercial success, despite the installation of modern port facilities and ambitions for their expansion. In both 1934 and 1935 the aggregate annual loss from operating and maintaining railroad, port, and elevator was about $200,000 and would have been higher had not the small profit accruing from the elevator operation decreased the total loss.

Factors, other than those imposed by nature, which seemingly

have been most potent in checking the maximum functioning of the port are:

(1) The distress reduction in freight rates from the head of the lakes to Montreal which has given a new stimulus to the old trade route.

(2) The improved Welland Ship Canal, opened in August, 1932, which obviates transshipment of grain at Port Colborne.

(3) The cost of wheat storage at Churchill which, tho at first free to encourage trade, hereafter will cost approximately as much as elsewhere.

(4) The high ocean freight rates charged because of inability of vessels to secure full incoming cargoes.

(5) The high railway freight rates on less than carload lots from Churchill to the interior.

Conclusions

Commerce is made up of trade flows, and these flows follow lines of least resistance. Churchill enthusiasts have vigorously attempted to decrease the resistance to the Hudson Bay route which natural conditions and hostile competition have engendered, yet probably that route will not soon attract a very significant part of the total flow of Canadian trade. It may be that the future rôle of Churchill's port facilities will be to warn those who set freight rates that if shipping costs to Europe over the southern routes are excessive, the Hudson Bay route can offer a modicum of competition.

CALCULATING ROTATIONAL SPEEDS AND THE LENGTHS OF DEGREES OF LONGITUDE IN VARIOUS LATITUDES

HAROLD S. PALMER
The University of Hawaii

THE PROBLEM

Recently Dr. Bratton[1] pointed out most vividly the fact that places in high latitudes are carried with less speed by the earth's rotation on its axis than are places in low latitudes. The greatest speed is on the equator, all points of which move with a speed of 25,000 miles a day, or 1,040 miles an hour, or 17⅓ miles a minute. Since the parallel of 60° latitude, either north or south, is a circle just half the size of the equator, all points on the 60th parallel move with a speed of 12,500 miles a day, or 520 miles an hour, or 8⅔ miles a minute. The point at either pole does not travel at all, but merely turns in place something like a soldier executing "Left Face!"

The calculation of these speeds for these special cases is easy, but for other latitudes involves either some trigonometry or some grafical construction such as that given in this paper.

ROTATIONAL SPEEDS FOR SPECIAL LATITUDES

Fig. 1 represents the earth with one eighth of the sphere drawn only in faint lines. The outer circle (EFGNOPQS) represents a meridian and its continuation on the opposite side of the earth. The ellipse, NLHKS, represents another pair of meridians at right angles to the first pair of meridians. NABCS is the axis, with N and S the poles. The ellipse, EKQ, represents the equator with two radii, CQ and CK. The ellipse, FHP, represents the 30th parallel north, with two radii, BP and BH. The ellipse, GLO, represents the 60th parallel north, with two radii, AO and AL.

Let us suppose that Mt. Kenya is actually on the equator, and is represented by the point K. During a day, Mt. Kenya will move the whole length or circumference of the equator. Let H represent Houston, Texas, which is about 30° from the equator. During a day Houston will move the length or circumference of the circle which is represented in Fig. 1 by the ellipse, FHP. Finally, let L

[1] Sam T. Bratton. "Comparative Rotational Speeds," JOURNAL OF GEOGRAPHY, Vol. XXXIV, No. 5, pp. 210-212, May, 1935.

represent Leningrad, which is about 60° from the equator. During a day Leningrad will move the length or circumference of the circle represented by the ellipse, GLO. So, if we could measure the lengths of these circles we would know the lengths of the daily journeys of these three points. It is impossible to get the circumferences easily

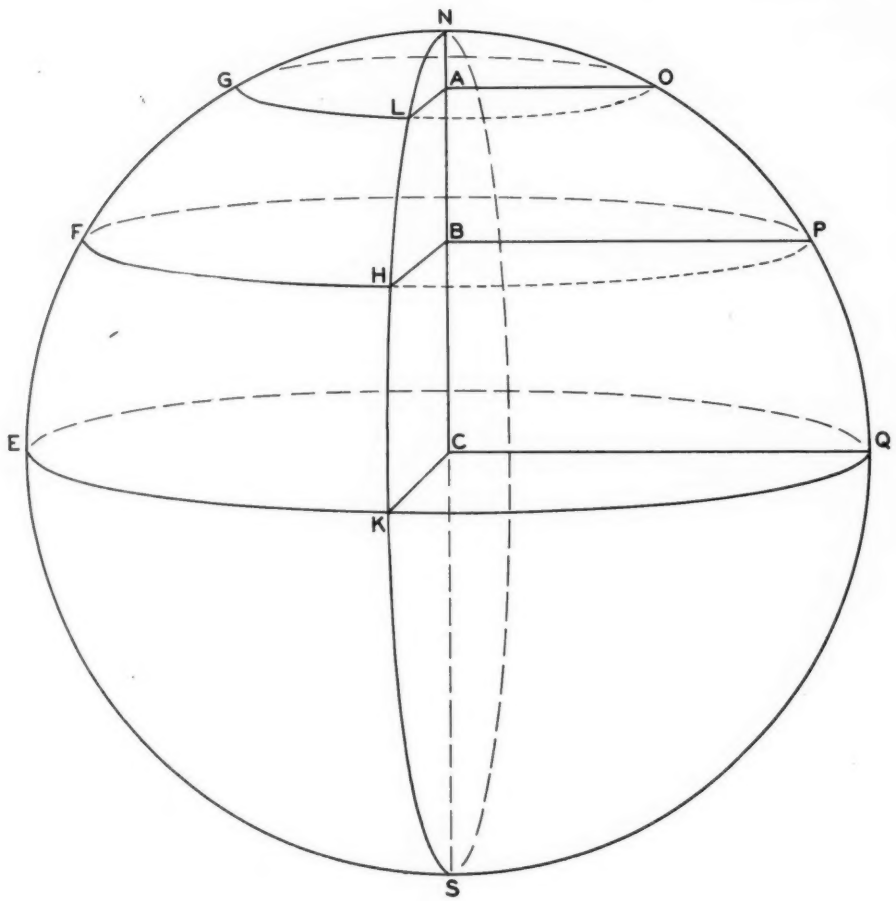

FIG. 1

from these ellipses, and it would be rather awkward to measure them on a globe. Fortunately, geometry tells us that the circumferences of all circles are proportional to the lengths of their radii. We could multiply the lengths of the radii (CQ, BP, and AO) by 2π ($\pi = 3\frac{1}{7}$ or 3.1416) and get the circumferences. A simpler way is to draw the diagram to some scale so that the circumferences will be indicated directly by the lengths of the radii. If we were to

make a scale that would divide the radius of the circle representing the equator into 25 equal parts, we could let each space represent a velocity of 1,000 miles a day. Measuring the length of BP (the radius of the 30th parallel) on the same scale we would find it to be about 21½ spaces long, which we would interpret to mean that Houston travels twenty-one and a half thousands of miles or 21,500 miles daily because of the earth's rotation. We would find AO (the radius of the 60th parallel) to be 12½ spaces long, so we would conclude that Leningrad is moved 12,500 miles daily by the earth's rotation.

If we wished to express the speed in terms of miles an hour instead of miles a day we might simply divide the results gotten above by 24. Or we might get it directly by using a different scale. Thus, we might divide CQ (the radius of the equator) by a scale such that 10 2/5 divisions, each representing 100 miles an hour, would equal CQ in length, and then apply this scale to the radii of the 30th and 60th parallels. We would find BP to have a length of 9 spaces, which at 100 miles an hour would give Houston a velocity of 900 miles an hour. AO would be 5 1/5 units long and would indicate for Leningrad a speed of 520 miles an hour.

Or we might wish to express the speed in terms of miles a minute, and would make a scale such that 17⅓ divisions equalled CQ, the radius of the equator, each division representing a speed of 1 mile a minute. BP would have a length of fifteen units on this scale and AO would be 8⅔ units long. These lengths would correspond to velocities of 15 miles a minute for Houston and 8⅔ miles a minute for Leningrad.

ROTATIONAL SPEED IN ANY LATITUDE

Similar grafical computations may be made for any latitude. For this we do not need the whole diagram of Fig. 1. The quarter-circle, NCQ, will suffice, and is redrawn in Fig. 2 on a larger size and adjusted in printing so that the radius is 25 eighths of an inch long. Each eighth of an inch then represents a daily journey of 1000 miles or a speed of 1000 miles a day. Such a scale is drawn at the bottom of the quarter-circle, and is labeled "Scale 1." We can use Fig. 2 in at least two ways to get the daily speed. Take, for example, Merida, Yucatan, which is about 21°N. Plot the point, M, at the 21° point on the circle, and drop the line, MY, perpendicular to the radius of the equator, CQ, and cutting it at the point Y. Y falls

on the scale at the point corresponding to 23,300, so we find that Merida has a speed of 23,300 miles a day on account of the earth's rotation. A second method amounts to the same thing, and may be illustrated by Denver, which is in about 40° N. Lat. At the 40° point on the quarter-circle plot the point, D, and from it drop a perpendicular, DX, to NC representing the axis of the earth, and cutting it at X. With a pair of dividers, or by marking off its

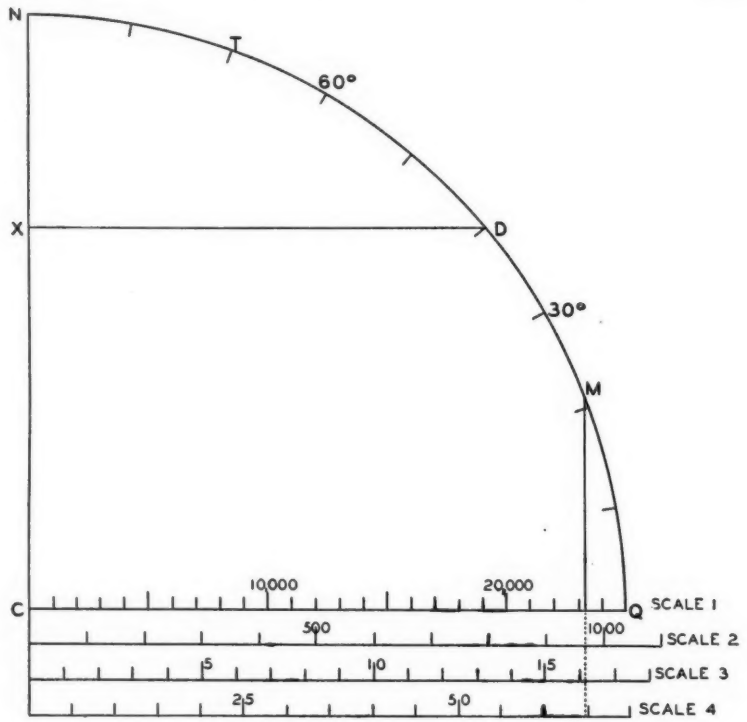

FIG. 2

length on a strip of paper, apply the length of DX to the scale and find it to be about 19 1/5 spaces long. This means that the speed of Denver due to the earth's rotation is about 19,200 miles a day. If one measures the length of DX with a ruler one will find it to be a trifle over 2 3/8 inches long. But 2 3/8 inches is 19/8 inches. The second method can be modified by using a ruler directly and calculating the number of eighths of an inch. This may be illustrated by another example, Tromsoe, nearly 70° north of the equator in Norway. The 70° point on the quarter-circle is marked T. Its distance from the line NC is about one and one-eighth inches, or nine eighths

of an inch. This means that the earth's rotation moves Tromsoe with a speed of 9,000 miles a day.

Below the main part of Fig. 2 are three additional scales, besides Scale 1 which was used above. Scale 2 is divided so that the earth's radius contains 10 2/5 spaces, each of which represents a speed of 100 miles an hour. The line MY, for Merida, when extended cuts Scale 2 at the point corresponding to 970 miles an hour, another expression for Merida's rotational speed. We could read on the same scale that Denver's speed is about 800 miles an hour.

The divisions of Scale 3 are such that 17 1/3 units just equal the length of the equator, and each unit represents a speed of one mile a minute. If we extend MY it cuts Scale 3 at about 16 1/5, which means that Merida moves with a speed of 16 1/5 miles a minute because of the earth's rotation. Applying the length DX to this scale we find Denver's speed to be about 13 1/3 miles a minute.

LENGTHS OF DEGREES OF LONGITUDE

Scale 4 has a quite different purpose, namely, that of calculating the length of a degree of longitude in any latitude. A degree of longitude is 1/360 of the length of the whole parallel of which it is a part. Since the parallels decrease in size from the equator to the poles, the lengths of degrees of longitude must also decrease. At the equator, a degree of longitude is 1/360 of 25,000 miles or 69.4 miles. A degree of longitude along the 60th parallel is just half as long since the circumference of the 60th parallel is just half the circumference of the equator. Like relations prevail for other latitudes. Scale 4 is divided so that 69.4 units have the same length as CQ, but, to avoid crowding, only every fifth unit is plotted. Continuing MY down to Scale 4, we find that a degree of longitude in the latitude of Merida has a length of almost 65 miles. Applying the length of DX to Scale 4, we find that a degree of longitude is about 53 miles long in the latitude of Denver.

It will have occurred to the reader that we have gone on two assumptions that are actually erroneous. In the first place the circumference of the earth is less by about 100 miles than the 25,000 assumed. This would make an error of about one-half of one per cent. In the second place the earth is not a perfect sphere as assumed, which introduces errors that are not easily evaluated. It is believed, however, that the limitations of drafting and measuring on the small scale of the present Fig. 2, make it undesirable to go

to the additional trouble necessary to eliminate the two sources of error. Most playing cards are about 1/100 inch thick. Put your pencil down on Fig. 2 a point away from the proper point by a distance of 1/100 inch, and you will be out the equivalent of 80 miles. Do we need to worry about assuming the girth of the earth to be 25,000 instead of 24,902 miles? Similarly for the oblate shape. In drafting the arc was made as nearly a perfect quarter-circle of 3 1/8 inches radius as possible. To allow for the oblateness, the north point should have been moved toward the center a distance of 1/100 inch. Is it a serious error? No. Probably more serious inaccuracies have been produced in the drafting.

Fig. 2 is, of course, equally applicable to points in the southern hemisphere. Thus, MY, which was drawn for Merida in 20° north latitude, would serve for a Mackay, Australia, in 21° south latitude. Likewise, DX, drawn for Denver in 40° north latitude, does fairly well for Valdivia, Chile, which is close to 40° south latitude.

THE SYRACUSE MEETING OF THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

W. J. BERRY, SECRETARY

The 1936 conference of the National Council of Geography Teachers was held at Syracuse, N.Y., on December 29 and 30, 1936. Interest in all the sessions was high and the attendance was about as usual despite the fact that other educational conferences kept many New York educators from being present at the Council sessions.

The program arranged by President Alison E. Aitchison was especially praiseworthy. It presented a good selection of papers both in technique of geographic instruction and in reports of geographic research. Especially noteworthy was the report of the Committee on Geography Tests which was selected in 1935 by the National Council of Geography Teachers for construction of geography tests for publication by the National Council.

The session of Tuesday morning was general in nature, as shown by the titles: Geography of the Syracuse Region, by Sidman P. Poole; You and Your Natural Environment, by Cora P. Sletten, and Geography Requirements for State Certification of Teachers, by Isabelle K. Hart. Mrs. Hart's study is to be continued for reporting at a later date.

A special feature of Tuesday was a field trip conducted by Dr. Poole at the noon intermission.

The program of Tuesday afternoon may be considered the outstanding session of the conference from the standpoint of purely educational geography, it being given over exclusively to geographic testing. Techniques in geographic testing at elementary levels were presented by Dr. F. E. Lord; testing at college level was discussed by Dr. Ralph H. Brown. Dr. Harry P. Smith, College of Education, Syracuse University, pointed out major objectives, special values, and some limitations of standardized tests. Of special significance at this session was the progress report, given by Marguerite Uttley, on the geography tests being constructed by a special committee of the National Council. Miss Uttley outlined the bases upon which the tests are being built, described methods of procedure, and reported the present status of the work.

At the evening session the Council was favored with an enter-

taining and instructive account, by Dr. Robert S. Platt, of first-hand experiences on an Amazonian traverse.

The sessions of Wednesday were particularly strong. In his paper, Attributes of Place, Dr. Elmer W. Ekblaw reemphasized an attractive philosophy of geography. City studies were presented by Martha E. Norburn and Margaret Parker. Dr. Alice Foster interpreted for the Council the personality of the Guayaquil Lowland and Dr. Marie Bentivoglio ably showed how manufacturing in Italy has been superimposed upon the rural pattern with but a slight shift in population.

The program of Wednesday afternoon was devoted to conservation, a field of investigation in which President Aitchison has been actively interested for many years. Nora Zink discussed the subject from a regional point of view. Dr. Helen M. Strong of the Soils Conservation Service discussed the conservation of soils. Gilbert White of the National Water Resources Committee outlined some major objectives and achievements in national planning of water resources. George A. Duthie of the Forest Service outlined the wealth of material available on forest conservation and urged the need of stimulating interest in the schools for forest conservation.

The address following the annual banquet was given by Dr. Derwent S. Whittlesey of Harvard. Dr. Whittlesey explained at length how the historical background is reflected in the political pattern of West Africa, an area which he is especially qualified to discuss because of extensive library investigations and recent field studies in the area.

At the annual banquet the Distinguished Service Award of the National Council of Geography Teachers was conferred upon Isaiah Bowman, President of Johns Hopkins University, in recognition of his many contributions to educational geography.

BUSINESS MEETINGS, 1936

The annual business meeting of the Board of Directors and Executive Committee of the National Council of Geography Teachers was held in two sessions, the first occurring at 8:00 P.M., December 28 at room 522, Hotel Syracuse in Syracuse, N.Y., and the second at the same place on December 30.

At the first session the following business was transacted:

1. The meeting was called to order by President Alison E. Aitchison.
2. The minutes of the 1935 meeting were read by the secretary and approved with one correction.
3. President Aitchison presented briefly the proposition that the Board might well adopt the policy of each year choosing a definite field of investigation.
4. Miss Kathryn Roberts of Cortland, New York, presented for the New York

State Geographical Association, information relative to some pending curricula revisions which were considered a definite danger to geographic education.

5. It was moved and seconded that a committee be chosen to formulate a resolution setting forth statements relative to the contributions and uses of geographic study. The motion was approved.
6. President Aitchison presented the subject of high school geography as a possibility for study by the National Council of Geography Teachers. However, the lateness of the hour prevented discussion and the meeting was adjourned with no formal action on the subject having been taken.

At the second session of the meeting the following business was transacted:

1. The meeting was called to order by the president.
2. The treasurer's report was read by Treasurer H. Harrison Russell. The report indicated that there had been a slight increase in the amount in the treasury despite the outlay for Professional Paper No. 4.
3. Mr. George J. Miller presented the report of the Special Committee appointed to draft a statement of the contributions of geography to education. After several suggestions were made for the consideration of the committee the report was approved. Members of the Board volunteered to send Mr. Miller names and addresses of individuals and of boards who might be interested in receiving the report of the committee.
4. The report of the Nominating Committee consisting of Edna Eisen, J. E. Switzer and Cora P. Sletten, chairman, was presented by the chairman and the following were chosen as officers for the National Council for 1937:

   President, Earl E. Lackey
   First Vice-President, J. Russell Whitaker
   Second Vice-President, Lucia C. Harrison
   Secretary, Floyd Cunningham
   Treasurer, H. Harrison Russell
   Executive Committee: (term to expire in 1939) Alison E. Aitchison, Erna Grassmuck Gilland and DeForest Stull
   Distinguished Service Award Committee: (term to expire in 1941) Edith P. Parker
   Directors at Large: (one year only) David Olson, Thomas F. Barton, Alice Foster and Ida May Shrode
5. At this juncture two letters were read by the Secretary, the first from George J. Miller announcing the publication of Volume No. 4 of Geographic Education Series, entitled, "Activities in Geography," and the second from A. E. Parkins and J. R. Whitaker in which the editors and authors of "Our Natural Resources and Their Conservation," offer to donate equally to the National Council of Geography Teachers and the Association of American Geographers the royalties derived from the sales of the book.
6. It was moved, seconded and approved that the National Council of Geography Teachers accept the offer of editors Parkins and Whitaker and the contributing authors. It was moved, seconded and approved that the Secretary be instructed to convey to Drs. Parkins and Whitaker the sincere thanks of the National Council of Geography Teachers for their very generous gift to the Council of half the royalties to be derived from the sale of "Our Natural Resources and Their Conservation."
7. It was moved, seconded and approved that the National Council express to Mr. Miller its appreciation for his efforts in preparing the volumes of The Geographic Education Series and that the expense incurred in preparing "Activities in Geography," $7.50, be paid him from the treasury.
8. In the absence of Mrs. Gilland, President Aitchison presented the report of the

Educational Relations Committee on the geography section of the summer N.E.A. meeting.

9. It was moved, seconded and carried that Mrs. Gilland be reimbursed to the extent of $10.00 for expenses connected with publicity for geography conferences.
10. It was moved and seconded that the incoming President and Secretary be empowered to choose the time and place of the 1937 meeting. Carried.
11. It was moved and seconded that the Council send $25.00 annual dues to the World Federation of Education Associations. Carried.
12. The report of the Resolutions Committee was read by Chairman Robert M. Brown.

    The National Council of Geography Teachers assembled at Hotel Syracuse, Syracuse, N.Y., December 29 and 30, 1936, present the following resolution:

    1. That the appreciation of the Council be extended to the Department of Geology and Geography of Syracuse University for the careful attention to detail, including student help, lantern, and facilities for display of maps, which made our stay in Syracuse pleasant and profitable.
    2. That the thanks of the Council be extended to the management of Hotel Syracuse for meeting and lounging space.
    3. That the gratitude of the Council be extended to the Department of Geology and Geography of Syracuse University and to the New York Geographical Association for entertaining the Council at reception and tea.

    CHRISTINE HAHN
    HENRY F. BECKER
    ROBERT M. BROWN, *Chairman*

13. Adjournment

THE DISTINGUISHED SERVICE AWARD

ALICE FOSTER
Committee Chairman

At the Syracuse meeting of the National Council of Geography Teachers the Distinguished Service Award was conferred upon President Isaiah Bowman of the Johns Hopkins University in recognition of leadership in geographic education exerted over a quarter of a century, and in appreciation of a specific service rendered at a critical time.

The following points indicate Dr. Bowman's leadership in geographic education during a period when the subject was undergoing transition to its present form:

1. Numerous geographic articles published in the decade before the World War indicate his pioneer work in the "humanizing of geography," a change which the educational world was pleading for at that time;
2. He showed an early interest in geographic education by acting as contributing editor of the JOURNAL OF GEOGRAPHY from 1907 to 1918;
3. He contributed much to geographic education at an adult level thru his distinguished work as Director of the American Geographical Society;
4. Thru the scholarly works which give the results of his research and exploration, he has made a valuable addition to the literature available for studying the little-known parts of the world;
5. Thru the timely publication of "The New World," made possible by his work in connection with the Peace Conference, he facilitated greatly the teaching of geography during the early post-war period;
6. The preparation of the one-to-a-million map of Hispanic America, undertaken by the American Geographical Society under his directorship, represents an invaluable contribution to the material available for geographic education;
7. His services as president of the International Geographical Union from 1931 to 1934 and as vice-president since 1934-testify to an interest in geographic education extending beyond national boundaries;
8. He rendered valuable services to geographic education as a member of the Krey Commission, particularly thru the monumental volume, "Geography in Relation to the Social Sciences," which he contributed to the report of the commission.

The specific service recognized in the award was rendered soon after the close of the World War. Then Dr. Bowman's clear vision and generous action at an opportune time gave the National Council an official organ of publication. In 1918 the American Geographical Society under Dr. Bowman's directorship made arrangements whereby it assumed ownership of the JOURNAL OF GEOGRAPHY, which up to that time had been under personal management and control. During 1919 the JOURNAL for the first time was published as the official organ of the National Council of Geography Teachers, then

some five years old. This changed status came about at the suggestion of Isaiah Bowman, whose name appears on the title page of the 1919 volume as editor. In 1920 the National Council took control of the Journal, the American Geographical Society having given the magazine new prestige thru association with a strong scientific organization, and having given to the National Council, without monetary compensation, a well-established magazine as its official organ.

President Bowman, compelled to be absent from the annual dinner of the National Council because of a speaking engagement elsewhere, sent the following message in response to the letter informing him of the action of the Award Committee.

To the National Council of Geography Teachers:

I appreciate deeply the kindness and generosity of the National Council in selecting me for an award this year. Tho I have not been a classroom teacher since 1915 I have always kept in vivid memory my fifteen years' experience as a teacher and my interest in the profession.

Permit me to take this opportunity of expressing my sincere regard for the National Council of Geography Teachers and my appreciation of the work it is doing. My belief is that the most intense concentration upon specific forms of endeavor, especially in the field of research, will do more to place geography in an acceptable and strong position in the schools than anything else I can think of. Teaching that is not related to research is bound in the end to be formalized and barren. The textbook is a most useful adjunct to teaching. It is indispensable that someone should give attention to the organization of material for teachers who are not qualified to obtain it or who do not have access to good library facilities. But teaching needs also to have constant revitalization thru discovery in new fields. And discovery comes by painful effort and intense concentration and cultivation.

In accepting your award and thanking you for it I beg to express the hope that the National Council of Geography Teachers will reach higher and higher standards of teaching and that it will never consent to look upon teaching as something apart from research but, rather, that teaching and research shall be regarded as the right and left hands of the educational process.

Sincerely yours,

Isaiah Bowman

EDITORIAL NOTES AND NEWS

A new bridge is not merely a crossing place over a body of water, but its great length, height, cost, beauty, its reflection of engineering skill and workmanship in triumphing over what was long thought to be unsurmountable difficulties, may be drawing cards for thousands who see it in the progress of building, witness its completion, or participate in the festivities arranged around it. Such is the case of the new San Francisco-Oakland Bridge whose recent dedication is reported to have brought into the cities so many visitors as to tax to their fullest capacity the hotels, restaurants, amusement places, and transportation agencies. And no wonder, for the project, a series of bridges and elevated highways, is eight and a fourth miles long, four and one half miles directly over water. Starting from street levels in San Francisco the motorist drives onto a ramp leading to the high Bay bridge, actually two suspension bridges, which extends to Yerba Buena Island where the roadway is tunnelled thru a hill. From there a cantilever bridge over East Bay and a viaduct lead down to the streets of Oakland. The bridge's top deck has six lanes for automobiles and is equipped for night driving with sodium vapor lamps. Pedestrians are not allowed. Later a lower deck will be provided with truck and bus lanes and interurban tracks. The convenience and saving of time over that of ferry travel, in spite of tolls, is expected to lead to some new alignments in the location of some industries and residences. Near this bridge, another bridge, the Golden Gate Bridge, is nearing completion. Both will play a large part in attracting visitors to the Golden Gate International Exposition of 1939. Staged on a built-to-order island in the Bay, the exposition will be dedicated to transportation and communication, a pageant of the Pacific. Later, the island is expected to become an air terminal for transcontinental and trans-Pacific skyways.

According to a recent release from the U. S. Department of Agriculture, the United States fur trade paid more than two million dollars for three types of fur, all of which came from Karakul sheep. The Soviet Union leads in this production, followed by Southwest Africa, and Rumania. A few purebred Karakul sheep were brought into the United States from their native home in Central Asia, in 1909, 1913, and 1914. Further importations have been restricted due to quarantine regulations; hence our small production of pelts. To meet this limited production, the Department has been crossing purebred Karakul rams with Blackface Highland and Corriedale ewes. These crosses are producing pelts comparatively high in quality. "Broadtail" is produced usually from pre-maturely born lambs and is a flat, lightweight, lustrous fur with a water-wave pattern. All the maturely born lambs a few days old have a tight, lustrous curl, such skins becoming the "Persian lamb" of the fur market, next in value to Broadtail. Lambs soon lose their tight curls, but their skins retain a wavy moire pattern for a few weeks which in trade is known as "caracul." Karakul sheep are able to thrive under adverse conditions, but the wool of the mature animal is coarse, and hence limited in use. Fur specialists say that the greatest drawback to commercial production of Karakul sheep lies in the instability of the market due to the whimsies of the style creators.

An interesting account of the evolution of territorial and county boundary lines has been brought out in the case of Utah by a W.P.A. project. The findings of the survey are summarized by Dr. George A. Hansen, Professor of Geology, Brigham Young University, in a publication entitled, "A Map History of the State of Utah." The boundary changes are shown on maps bearing pictorial representations of mountains,

cliffs, and rivers. The object of the project was to bring out the mistakes of the past with the hope that future redistricting of the state will be made by specialists, not by politicians, and will be in accord with topography and natural drainage lines.

Briefly, the Mormons claimed a vast territory surrounding the present state of Utah, with an outlet to the Pacific in Southern California. Recognizing a need for administrative units they divided the part near Salt Lake in which settlements had been made into six counties each of which roughly corresponded with a small valley delimited by natural barriers. When the territory was officially created, these counties were expanded into belts extending hundreds of miles east and west, and similar subdivisions were made of the remainder of the territory. Presumably the lack of knowledge of this unexplored area precluded the use of natural boundaries, and led instead to the use of meridians and parallels. Many boundary changes have since transpired, but the state still has only 45 per cent of its counties delimited by natural boundaries. Consolidations should be effected to permit a saving in costs of local government. It will be interesting to see how much of a stumbling block politics will play in the redistricting of the state following this survey.

More than 700 people attended the October program of the Geography Club of Western Pennsylvania held at Pittsburgh. A symposium on Secondary School Geography was presented by Dr. J. Freeman Guy, First Associate Superintendent, Pittsburgh Public Schools; C. A. Kuhner, head of the geography department, Clarion State Teachers College; Dr. James N. Rule, Principal Langley High School, Pittsburgh; and Jessie Whitehill, Gladstone High School, Pittsburgh. Dr. Wallace W. Atwood, President of Clark University, was the guest speaker, with an address on The New Meaning of Geography in American Education.

Dr. George B. Cressey of Syracuse University delivered a lecture at the Pennsylvania State College on October 19, "The Chinese Landscape." The lecture was sponsored by the Geology and Geography Department.

To stimulate research in the field they so ably serve, the editors of and contributors to "Our Natural Resources and Their Conservation" have relinquished their personal rights to royalties accruing from the sale of this publication and have instead delegated one-half of the royalties to the Research Fund of the National Council of Geography Teachers and the other half to a similar fund of the Association of American Geographers. The National Council accepts this gift with sincere appreciation of the vast amount of research these editors and contributors carried on in the preparation of this outstanding contribution to conservation. Surely each member of the Council must feel some personal satisfaction in belonging to an organization which has already made outstanding contributions to the teaching of geography, and at the same time is accumulating a fund that will promote further research in geographic education.

High school geography teachers may be interested in a series of articles on the organization, contents and methods of teaching economic geography, appearing in *The Business Education World*. Dr. Douglas C. Ridgley is the editor of the series and the contributor of the second article, "The Study of Commodities," published in October. Other contributions and their authors are as follows: September, The Function of Geography, Dr. W. Elmer Ekblaw; November, How We Teach Economic Geography,

Clare Symonds; December, A Lesson Plan for Teaching Wheat in a High School Course in Economic Geography, William R. Weaver; January, Cotton: The World's Leading Textile Crop, Dr. William T. Chambers; February, The Climatic Factor in Economic Geography, John C. Parsons; March, Economic Geography of the Grasslands, Dr. Sidney E. Ekblaw; April, Present Needs and Tendencies in the Conservation of Our Natural Resources, Richard J. Preston; May, Economic Geography as a Factor in Social Business Education, Dr. Harry O. Lathrop; June, Geography in the Senior High School, George J. Miller.

LOUISE W. MEARS, department of geography, Milwaukee State Teachers College, spent the Christmas holidays on a cruise in the Bahama Islands. For a number of years Miss Mears has been making a study of tropical islands, gathering first-hand material for a college course, "Tropical Islands of the World."

A contribution of great value to students of Latin American countries is the new Handbook of Latin American Studies, edited by Lewis Hanke, and published by the Harvard University Press, 1936. It is the outgrowth of a conference sponsored in 1935 by the Social Science Research Council which was attended by representatives from nine universities, the Library of Congress, and the American Geographical Society. The purpose of the conference was to enable specialists in the field of anthropology, archaeology, economics, geography, history, law, and literature to meet and to coordinate the achievements in their respective fields and thereby facilitate research in Latin American culture. The outgrowth of this meeting was the Handbook, made possible by generous financial assistance from the American Council of Learned Societies, and the efforts of many friends and organizations. It provides an annual record of important publications in the various fields mentioned above, with annotations and prefatory notes by the contributing editor in charge of each section. Future annual editions will be expanded to carry a number of special articles.

According to a release from the U. S. Department of Commerce, approximately $10,000,000 worth of Christmas trees are sold annually in the United States. From two to four million trees come from Canada. In scientific practices of forestry this cutting is a wise measure.

According to a recent release from the U. S. Department of the Interior, Chilean placer-gold production has been stimulated by a recent ruling of the Chilean International Exchange Commission authorizing the importation of luxuries (automobiles, radios, etc.) provided they were paid for with washed gold. The production in August was 82.6 kilos (a kilogram is 2.20 pounds) whereas in October it was 292.9 kilos. Placer mining had its first stimulus in 1931 when the Government sponsored it as an aid to unemployment. The output has increased from 270 kilos in 1932 to 2,234 kilos in 1934. Gold quartz mining has also increased. The total gold production from all mining operations totaled 4,583 kilos in 1933, 7,392 kilos in 1934, and 8,224 kilos in 1935.

HERBERT C. HANSON, State College Station, Fargo, North Dakota, one of the contributors to "Our Natural Resources and their Conservation," is the editor of *The Ranger*, a monthly publication dealing with recent developments in range and pasture management, wild life management, soil conservation, and related fields.

GEOGRAPHICAL PUBLICATIONS

Mark Jefferson. **Man in Europe,** 259+VIII pp., 99 illustrations. Published by the author and printed at Ypsilanti, Michigan. 1936. **$2.50.**

This book (a revision) is a brief geography of Europe in which a workbook has been incorporated. The contents can probably best be presented by listing the titles of the nine chapters: Europe the Leading Continent; Distribution of Population; Cities; Wealth; What the European Is Like; Climate; Vegetation Provinces; Pictures and Questions; Content of the Northern Plains.

There is much informality about the book. The style is chatty, thought stimulating, pithy, just what we have come to expect from "the Bernard Shaw of American geographers." The students and teacher are made to feel at home with each other.

It is a book to be studied, not merely read. In the preface the author tells us the book is prepared for use in the preparation of teachers. "It aims not to tell what the reader can work out for himself." This is a Mark Jeffersonian principle of teaching thoroly in line with the best in present-day philosophy of education.

Jefferson seems to be firmly of the belief that pictures in books are there for edification, not for mere illustration. He presents sixty pictures, halftones from his own negatives. These are carefully selected to illustrate some features of geography from the "top of Norway" to the Mediterranean and even beyond into Algeria. Each is an intimate presentation of the behavior of the people.

The author does not set up some hypothetical definition of geography which he strains to follow and bedevils all those who fail to agree with this particular definition. In his preface he says, "I have no mandates to define geography; but I want children to know where some of the more important people of the world are and what they are like, and I first want the teachers to know these things themselves." This is the keynote of his presentation.

One will find in the book several things that are new as one always expects in any product from the pen of Professor Jefferson.

A. E. PARKENS

George Peabody College
for Teachers

C. Langdon White and George T. Renner. **Geography, An Introduction to Human Ecology.** 756 pages. Numerous illustrations, maps and charts. D. Appleton-Century Company, New York. 1936. **$4.00.**

This book is one of The Century Earth Science Series edited by Kirtley F. Mather. It is written in an orderly manner, thoroly scientific, and presents the elements of geography in a manner suitable for college or normal school introductory work in geography. The main headings indicate that the emphasis might be placed upon the various elements of the natural environment, but such is not the case. The various elements of the natural environment are taken up in turn, and the authors show how man has reacted to these elements—in fact the major emphasis is placed upon man.

The text is divided into ten parts, the first of which gives a survey of the whole field of geography and includes the authors' point of view as that of the human geographer. The major portion of the book takes up the several geographic elements, namely: Climatic, Biotic, Physiographic, Edaphic (Soil), Mineral, Hydrographic, Spatial, and attempts to evaluate the influence each element exerts on the life of man. Concluding chapters deal with the Region, Field Work, and Man as a Factor in Geography.

Tho there are now several other texts in introductory college geography, White and

Renner have made a distinct contribution in reducing geography to a science. In this the book is outstanding.

The text has as subtitle, "An Introduction to Human Ecology," and applies the nomenclature and terminology of the science of ecology to geography thruout. Tho this parallel strengthens the work, it is perhaps unfortunate because of the lack of knowledge of ecology on the part of many beginning college students and the confusion that might follow in the attempt to liken and apply the principles of one science to another.

Geography, An Introduction to Human Ecology, is perhaps the greatest recent contribution to textbook writing in college geography.

BERT HUDGINS

Wayne University
Detroit, Michigan

Grover Clark. **The Balance Sheets of Imperialism: Facts and Figures on Colonies.** 136 pp., tables, appendices, and bibliography. Columbia University Press, New York, 1936. **$2.75.**

The Balance Sheets of Imperialism, as the name implies, consists largely of many pages of facts and figures on the finances of the colonies of England, France, Germany, Italy, and Japan; and of only 19 pages of text. The figures speak for themselves, and provide the data for the textual material on "Conclusions from the Evidence," which, interestingly enough, is placed in front of the tables.

In the text, the author outlines the claims as to the value of colonies under three heads: (1) that they provide important outlets for population, (2) that their possession gives important opportunities for trade, and (3) that control of the resources in colonies provides national security in times of peace, and advantages in times of war; and then proves by means of the attached "balance sheets" that each claim is fallacious. Prior to 1880, the profits to private concerns about equaled the government losses in colonies, but since that date the cash costs of owning and governing colonies have been much greater than the cash profits derived from trade with controlled territories. The territorial expansions of both Italy and Germany, largely since 1880, have been financial losses. In the intense struggle for colonies (largely Africa) in the latter part of last century, many active rivalries were begun in Europe that ultimately led to the World War. European nationals have not been attracted to European colonies as they have to other territories. The statement that, "in 1931 there were less than half as many Europeans of all nationalities in the Italian colonies as there were Italians on the island of Manhattan in New York," shows conclusively that ownership of colonial territory does not influence many nationals of the owning country. In conclusion the author states that "the case against the old colonial system is damningly clear," and that the old order must soon change. He sees some hope in the mandate control of a territory, provided the preferred rating of the controlling nation is eliminated in favor of equal opportunity to all nations for trade.

This interesting little volume provides, in its tables, data that have been scattered thru government reports, and here assembled for the first time under one cover. These data should be of value to both the geographer and the historian. The appendices on (1) the political status of colonized territories, and (2) the principal treaties relating to colonies, provide a convenient reference list for the busy teacher. The elaborate bibliography is particularly helpful in furnishing a list of government publications of the principal nations of the world, as well as the leading source materials on these same countries.

EDWIN J. FOSCUE

Southern Methodist University

Wisconsin, Regional Plan Report, 1934. 501 pp. Illustrated. Wisconsin Regional Planning Committee, Madison. 1936

This first report of the Wisconsin Planning Committee, aided by the National Resources Board and other federal and state agencies, analyzes and synthesizes the economic assets and natural resources of the state to the end that this may aid in the furtherance of plans for the orderly development of the state and its governmental agencies. These chapter headings indicate the scope of the work: Geographic Background, Population, Education, Health, Recreation, Water Resources, Mineral Resources, Conservation, Planning, Industry, Electric Power, Transport, Public Works, and Government and Taxation. The clear cut grafs and excellent maps are an outstanding feature of the report. Some of the maps included are by Guy-Harold Smith, Loyal Durand, Jr., and the Board of Engineers for Rivers and Harbors, U. S. War Department. Statistical data is from a great variety of private as well as state and federal organizations. Bringing together this vast amount of scientific material from so many excellent sources and presenting it in such an effective and easily comprehensible form cannot fail to be a noteworthy forward step in the wise use of Wisconsin's resources, and stimulate similar programs in other states.

Cora P. Sletten

John Bartholomew (Editor). **The Oxford Advanced Atlas.** 5th Ed. 96 pp. of maps, 32 pp. (3 cols.) of general index. The Oxford University Press, N.Y. 1936. $3.50

This is a complete revision of a well known atlas and comment on its high quality is not necessary. The size of the page has been increased so that the numerous double-page maps now measure approximately 20″ x 14¾″. New features include a morphology map of Europe; population map of the British Isles; new treatment, largely by double-page maps, of Spain and Portugal, Balkans, Soviet Union, Central and East Africa, South Africa, and Laurentic Basin; contoured maps of the Atlantic and Pacific oceans.

Webster's Collegiate Dictionary. 5th Ed. 1300 pp., 1800 ill., 110,000 entries. Indexed. G. & C. Merriam Co., Springfield, Mass. 1936. $3.50 to $8.50

An abridgment of Webster's New International Dictionary which has been the standard for many years. Altho a very large amount of material is included the volume is a handy size for desk use—thin paper being used. The supplementary material includes, Abbreviations, Arbitrary Signs and Symbols, Gazetteer, Biographical Dictionary, Christian Names, and Vocabulary of Rhymes. A truly remarkable volume considering its small size and low cost.

Erich von Drygalski and others. **Amerikanische Landschaft.** 8″ x 10¾″, 532 pp., 100 maps, diagrams, photos. Walter de Gruyter & Co., Berlin. 1936. RM 26.

This large volume consists of an introduction by Dr. von Drygalski and five essays on selected regions, each being an independent treatise. Ozarkland is given 128 pages by Rudolf Schottenloher; Kanadische Prärie, 101 pages by Max Eichmeier; Florida, 115 pages by Peter Berger; Jamaica, 113 pages by Wilhelm Küchler; and Seattle, 72 pages by Homer L. Seeger. A selected bibliography accompanies each paper.

NEW PUBLICATIONS

Atlas of the Tennessee Valley Region. Part 1, The Natural Series. Submitted by G. Donald Hudson. 19 pp.+12 cartographic charts. Land Classification Section, Division of Land Planning and Housing, Tennessee Valley Authority, Knoxville, Tennessee. 1936

Each of these excellent maps is accompanied by a brief text drawing attention to the salient facts brought out by the mapping. Section one has an individual map for each of these factors: physiography (based on A. K. Lobeck's diagram), soils, erosion conditions, and forest regions. Section two has eight maps, each one featuring some climatic element, as well as a chart showing more than a hundred individual station grafs selected to give a fairly accurate areal distribution of precipitation, temperature, and wind direction. A population distribution map concludes the set. The Atlas will be augmented by other series of maps as soon as released, such as the forthcoming Industrial Series. Others will depict analyses of land-use items, population, land values, and income.

Richard M. Field. **Natural Resources of the United States.** 203 pp. Illustrated. Barnes and Noble, Inc., N.Y. 1936. 75 cents.

One of the College Outline Series. A handbook especially valuable for quick reference and review. A bibliography is included.

Ernest R. Lilley. **Economic Geology of Mineral Deposits.** 811 pp. Illustrated. Henry Holt and Co. Inc., N.Y. 1936. $5.00

An exposition of the geologic form, structure, extent and distribution of mineral deposits, and the chemical and physical properties of rocks and minerals correlated with the economic utilization of mineral resources and the consideration of the commercial, industrial and political problems associated with the demand for mineral substances.

Leila Gott Harris and Kilroy Harris. **It Happened in South Africa.** 191 pp. **It Happened in Australia.** 173 pp. Illustrated. McKnight and McKnight, Bloomington, Ill. 1936. Each 75 cents.

Supplementary material, gleaned from personal contacts with the scenes and incidents described, covering present economic development and living conditions, as well as brief references to the past.

C. Langdon White and George T. Renner. **Geography, An Introduction to Human Ecology.** 790 pp. Illustrated. D. Appleton-Century Co., N.Y. 1936. $4.00

The authors devote separate chapters to a comprehensive discussion of each of the various elements of the natural environment together with man's reactions to them and an evaluation of the reaction. Then the elements are synthesized in a regional treatment of certain specific areas, with a chapter on the significance and methodology of field work, and one on man as a factor in geography. The book is one of the Century Earth Science Series, Kirtley T. Mather, Editor.

Frances Carpenter. **Our Little Friends of Norway, Ola and Marit.** 213 pp. Illustrated. American Book Company, Boston. 1936

One of a series of home-life supplementary readers for the lower grades; an excellent sympathetic understanding of the life of two fiord farm children at home, at school, and at places visited in various parts of Norway.

Griffith Taylor. **Environment and Nation: Geographical Factors in the Cultural and Political History of Europe.** 571 pp. Illustrated. University of Chicago Press, Chicago, Ill. 1936. $4.00

An analysis of the cultural development of nations and the nations' spread over Europe as related to the natural landscape, especially the topographic and climatic features, to the end that man-made prejudices may be swept aside, and that each nation may learn that its rank in the world is in proportion to its cultural and economic status, not its prejudices of race, language and religion. The book is a sequel to the author's Environment and Race, to be followed by Environment and Settlement, dealing with smaller units of settlement than the preceding.

The Winston Simplified Dictionary for Schools. Edited by Thomas Kite Brown and William Dodge Lewis. 950 pp., 10 color plates, 24 maps in color. John C. Winston Co., Philadelphia. 1936. $1.28

A new feature is the inclusion of all place names in the main word list where, in addition to the foreign form of the word and the information on the place, reference is made to a specific plate in the map section bearing the place name. The main list also includes abbreviations and those foreign words commonly used in English writing.

Gordon East. **An Historical Geography of Europe.** 480 pp. Illustrated. E. P. Dutton and Co., Inc., N.Y. 1935. $5.00

A geographic interpretation of the development of European nations, beginning with the Roman Empire and containing thru the nineteenth century. Part I emphasizes the agricultural pattern, particularly its field systems, varieties and distribution of crops, and the attempts to get woodland, marsh and heath into tilled fields; and the distribution and localization of industry, commerce, and transportation. Part II outlines the territorial evolution of a number of modern states including résumés of former empires bordering the Mediterranean.

Course of Study in Geography for Grades IV, V, VI, VII. Prepared by the Florida Council of Geography Teachers, under the supervision of H. F. Becker and Gladys Fawley. 154 pp. State Department of Public Instruction, Tallahassee. 50 cents + 10 cents postage.

The basic principles underlying the course are in accord with those embodied in the Thirty-second Yearbook of the National Society for the Study of Education. The outline for each grade is organized in a series of teaching units with directions for attaining certain major understandings from the regional studies selected, along with certain specific abilities, skills, and habits.

John R. Stewart. **Manchuria Since 1931.** Secretariat Papers No. 2. 53 pp. Secretariat, Institute of Pacific Relations, Publications Office, 129 East 52nd Street, New York. 1936. 25 cents

Prepared for the Sixth Conference of the Institute of Pacific Relations, held at Yosemite Park, California, August 15-29, 1936.

The JOURNAL *of* GEOGRAPHY

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The Plains of the Po. By W. O. Blanchard 81

Dr. Blanchard is a professor of geography in the University of Illinois. He spent part of 1925 and part of 1931-32 in field studies in Europe. He is joint author of Economic Geography of Europe, and is a frequent contributor of articles based upon studies of that continent, several of which have appeared in the JOURNAL.

Athens: A Balkan Capital, by Carl L. Stotz, will be the next article in our series on Europe.

The Use of Standardized Tests. By Harry P. Smith 93

Dr. Smith is a professor of education at Syracuse University and director of research in the Syracuse public schools. He is author of numerous contributions to the field of education and school administration.

Dr. Smith's paper was presented at a session of the recent meeting of the National Council of Geography Teachers, which was devoted to the problems of tests. Another paper on tests will appear next month and others will be published in later issues of the JOURNAL.

The Position of Geography in the High Schools of the Netherlands. By H. Eggink 98

Mr. Eggink is an instructor in the Municipal Lyceum for Girls at Amsterdam. While teaching in Java he contributed an article to the JOURNAL (Sept., 1923), dealing with that area.

Some Effects of Weather on the Urban Dweller. By George F. Deasy 106

Mr. Deasy is a graduate of the University of Cincinnati and an instructor in geography, in his Alma Mater. This article was written long before the recent devastating floods at Cincinnati and other points along the Ohio.

Tel Aviv: The New City of Palestine. By E. Ray Casto 111

Dr. Casto has been head of the department of geology and geography, Emory and Henry College, since 1920. During part of 1935 he made extensive field studies in Palestine.

Timber Lines. By Clyde E. Cooper 116

Dr. Cooper is head of the department of geography and geology, Ohio University, past-president of the National Council of Geography Teachers, and a frequent contributor to educational journals. He is author of a Junior High School Geography to be published soon.

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